Claims:

1. A method of determining one or more matter properties, comprising:

determining, at least in part, a mean attenuation coefficient for said matter using a plurality of radiological data sets;

comparing said mean attenuation coefficient with a theoretical mean attenuation coefficient; and

determining one or more matter properties, based at least in part on said comparison.

2. The method of claim 1, wherein said matter comprises one or more of: glandular matter and fatty matter.

3. The method of claim 2, wherein said one or more matter properties comprises radiological density in terms of percentage of glandular and/or fatty matter.

4. The method of claim 3, wherein said plurality of radiological data sets comprises at least two radiologically produced images.

5. The method of claim 4, wherein said density is determined on a pixel-by-pixel basis.

6. The method of claim 3, wherein said mean attenuation coefficient comprises a numerical data value, wherein said numerical data value is based, at least in part, on at least two radiological data sets wherein the data sets account for one or more random or pseudo-random factors affecting results.

7. The method of claim 6, wherein said one or mor random or pseudo-random factors affecting results comprise one or more of: photon scatter, matter shape, matter size, and variations in equipment measuring the radiological data.

8. The method of claim 3, wherein said plurality of radiological data sets comprises at least two radiologically produced images;

said theoretical mean attenuation coefficient being based, at least in part, on a mathematical model of image data.

9. The method of claim 8, wherein said mathematical model accounts for one or more of: photon spectrum, attenuation factors for said glandular and fatty matter as a function of photon energy, and response behavior of a detector.

10. A method of determining a property of a material, comprising:

obtaining a first radiological data set for at least a portion of said material by use of an imaging system;

obtaining a second radiological data set by use of said imaging system without said material;

determining, at least partially, a mean attenuation coefficient, by using at least a portion of said first and said second radiological data set.

11. The method of claim 10, and further comprising:

at least partially determining a theoretical mean attenuation coefficient, and determining, at least partially, a property of said material, based at least in part on said theoretical mean attenuation coefficient, and said mean attenuation coefficient.

12. The method of claim 11, wherein said material comprises glandular matter and fatty matter and said property comprises glandular and/or fatty matter composition.

13. The method of claim 12, wherein said density is determined from said imaging system on a pixel-wise basis.

14. The method of claim 12, wherein said mean attenuation coefficient on a pixel-wise basis. represented by $\mu^t{}_j$, where j is a particular pixel, is substantially in accordance with the following relationship

$$\mu_j^t = \frac{\ln I_j^{0}{}' - \ln I_j{}'}{t}$$

where I_j' comprises a first representation of signal intensity at pixel j with scatter at least partially accounted for, $I_j^{o}{}'$ comprises a second representation of signal intensity at pixel j with scatter at least partially accounted for, and t is thickness of said material.

15. The method of claim 12, wherein said theoretical mean attenuation coefficient is determined on a pixel-wise basis, represented by $\mu^{t(m)}{}_j$, where j is a particular pixel, is substantially in accordance with the following relationship

$$\mu_j^{t(m)} = \frac{\ln I_j^{0(m)} - \ln I_j^{(m)}}{t}$$

where , $I_j^{(m)}$ and $I_j^{o(m)}$ comprise a first and second modeled value of signal intensity at pixel *j* and are obtained by the following relationships

$$I_j^{0(m)} = \sum_{l=1}^{M} S(E_l) e^{-\mu_c(E_l)t_c} (1 - e^{-\mu_d(E_l)t_d}) E_l$$

$$I_j^{(m)} = \sum_{l=1}^{M} S(E_l) e^{-\mu_{t_r}(E_l)t - \mu_c(E_l)t_c} (1 - e^{-\mu_d(E_l)t_d}) E_l$$

where *S(E)* comprises a source photon spectrum, and *(μ_f(E))* and *(μ_g(E)) represent* attenuation coefficients for said fatty material and glandular material as a function of photon energy, the attenuation coefficient, and the thickness of the cover material of the detector, are denoted by μ_c *and* t_c, respectively, and the attenuation coefficient and the thickness of the detector material are denoted by μ_d *and* t_d, respectively.

16. The method of claim 12, and further comprising determining a percentage glandular and/or fatty matter composition of at least a portion of said material, based at least in part on the ratio of said mean attenuation coefficient and said theoretical mean attenuation coefficient, substantially by application of the following relationship

$$C_j = 100 \cdot (1 - \frac{\mu_j^{g(m)} - \mu_j^t}{\mu_j^{g(m)} - \mu_j^{f(m)}})$$

where C_j comprises a density composition of said subject, $\mu_j^{g(m)}$ and $\mu_j^{f(m)}$ comprise the theoretically-calculated mean attenuation coefficients for an object made of 100% glandular tissue and 100% fatty tissue, respectively.

17. The method of claim 10, wherein said data sets comprise radiologically produced images.

18. An imaging system, comprising:

a detector array, having a plurality of pixels;

a computer coupled to said detector array, said computer configured to, in operation:

obtain a first radiological data set from said detector for at least a portion of an object being imaged;

obtain a second radiological data set from said detector without said object being imaged;

determine a mean attenuation coefficient for one or more of said pixels of said detector;

determine a theoretical mean attenuation coefficient for one or more pixels of said detector for said object being imaged; and

determine a material property of said object for one or more of said pixels of said detector, based at least in part on said m an attenuation co fficient and said mean theoretical attenuation coefficient.

19. The imaging system of claim 18, wherein said imaging system comprises a tomosynthesis system.

20. The imaging system of claim 18, wherein said material property comprises percentage density.

21. The imaging system of claim 18, wherein said object comprises one or more of: glandular matter and fatty matter.

22. The imaging system of claim 18, wherein said object comprises a human breast.

23. An article comprising: a storage medium, having stored thereon instructions, that, when executed, result in the at least partial determination of a material property for an object by:

obtaining a first radiological data set for at least a portion of said material by use of an imaging system;

obtaining a second radiological data set by use of said imaging system without said material; and

determining, at least partially, a mean attenuation coefficient, by using at least a portion of said first and said second radiological data set.

24. The article of claim 23, wherein said instructions, wh n executed, further result in; at least partially determining a theoretical mean attenuation coefficient, and determining, at least partially, a property of said material, based at least in part on said theoretical mean attenuation coefficient, and said mean attenuation coefficient.

25. The article of claim 24, wherein said material comprises glandular matter and fatty matter and said property comprises glandular and/or fatty matter composition.

26. The article of claim 24, wherein said material property is determined from said imaging system on a pixel-wise basis.